

REMARKS

Claims 12-20, 22-26, and 29 are pending and under rejection, claims 1-11, 21, and 27-28 having been canceled in prior amendments. No pending claims are currently amended. The specification has been amended at page 11 to provide explicit description of the firing temperature range of claim 29. Support for this amendment appears in claim 11 of the application as filed, which forms part of the original disclosure and may be relied on to amend the specification as needed to conform the specification to the claims. See M.P.E.P. §§ 608.01(I), 608.01(o), and 2163.06. Therefore the amendment to the specification is proper and adds no new matter to the application.

Claim Rejections - 35 U.S.C. § 112

Claim 29 stands rejected under the first paragraph of 35 U.S.C. § 112 as lacking description in the specification for a firing temperature of 500 °C to 2000 °C. The specification as amended above supports the firing temperature range of claim 29, without adding new matter to the application. This rejection therefore should not be maintained in the next action.

Claim Rejections - 35 U.S.C. § 103

Claims 12-20 are directed to filter devices and stand rejected for obviousness on two independent grounds - over U.S. Patent No. 5,690,161 (Daussan) in view of U.S. Patent No. 5,785,851 (Morris) and U.S. Patent No. 5,520,823 (Jones), and over Daussan in view of Morris and U.S. Publication No. 2007/0090047 (Bell). Claims 22-26 and 29 are directed to methods of making filter devices and also stand rejected on two independent grounds - over Jones in view of Daussan and Morris, and over Bell in view of Daussan and Morris. For the reasons that follow, applicant respectfully urges that these references as combined do not render the present claims *prima facie* obvious.

In each ground of rejection the references as combined fail to describe at least one element of the rejected claims. In all four rejections, the element not described is the carbon bonded network of graphitized carbon, the graphitized carbon constituting the bonded network being present in an amount up to 15% by weight of the filter. The graphitized carbon present in an amount up to 15% by weight of the filter is an element of claims 12 and 22, and by dependence the remainder of the rejected claims. This element is not found in the references as alleged.

In each ground of rejection it is recognized that Daussan and Morris do not teach a carbon bonded network with graphitized carbon present in an amount up to 15% by weight of the filter. The rejections find this element instead in either Jones or Bell.

Jones describes a filter for the filtration of molten light metals comprising a reticular foam formed from a composition comprising graphite, wollastonite, silica, and a borosilicate glass, wherein the filter consists of a crystalline phase comprising graphite and wollastonite dispersed in a substantially amorphous matrix of borosilicate glass. The filters are made by impregnating a large piece of reticulated organic foam, such as polyurethane foam, with an aqueous slurry containing the graphite, wollastonite, silica, and borosilicate glass and drying and firing the impregnated organic foam to burn off the organic foam to form a ceramic foam. Jones, col. 1, lines 11-17, col. 2, lines 9-16. The slurry used to impregnate the organic foam usually contains about 5-25% by weight graphite, and up to 5% by weight of amorphous carbon to modify the rheology of the slurry and loading of the slurry on the organic foam. Jones, col. 2, lines 28-31, col. 3, lines 13-19.

Nowhere does Jones state that after firing, the resulting filter comprises up to 15% by weight of a carbon bonded network of graphitized carbon. That no carbon bonded network exists in it Jones's product is plain from its description. The Jones filter consists of a crystalline phase comprising graphite and wollastonite dispersed in a substantially amorphous matrix of borosilicate glass. Jones, col. 2, lines 9-16. The borosilicate glass is a continuous phase, in which the particulate graphite and wollastonite as discontinuous phases are dispersed. The graphite phase is discontinuous in the final product and therefore not in the form of a network, in which the carbon elements are linked. The up to 5% by weight amorphous carbon particles in to the slurry to modify rheology and aid loading also are also a dispersed, and therefore discontinuous, phase in the resulting fired borosilicate glass matrix. Juma Decl. Jan. __, 2010 (Juma Decl. II) at ¶ 15. By the explicit descriptions of its own product, Jones excludes the claimed carbon bonded network. Thus the rejection of claims 12-20 over Daussan in view of Morris and Jones is simply wrong where it says on page 3 that "Jones teaches a filter . . . comprising fibers and a carbon bonded network of graphitized carbon"

It is also clear that the process described in Jones is not the same as the claimed process and would not lead to the claimed product. Graphite fired at the temperature described in Jones (up to 850 °C) is inert and will not form carbon-carbon bonds, so no carbon bonded network of graphitized carbon could form from the graphite dispersed in the borosilicate glass

upon firing. Juma Decl. July 28, 2009 (Juma Decl. I) at ¶ 13. In addition, the high proportion of borosilicate glass forming the continuous phase combined with Jones's process of firing in an oxidizing environment would preclude the formation of a continuous carbon bonded network by the optionally included amorphous carbon. Juma Decl. II at ¶¶ 13-15.

The several statements in the pending action that Jones teaches a non-oxidizing atmosphere (p.5), that Jones teaches that it is advantageous to avoid oxidation conditions (p.10), and that a non-oxidizing atmosphere is desirable (p.10), distort the reference beyond reason. Jones merely notes that it is believed adding silicon metal reduces the tendency of the graphite to oxidize during firing. Jones, col. 3, lines 23-25. There is no mention anywhere of a non-oxidizing environment, or of any advantages associated with it, and not surprisingly, since oxidizing conditions in Jones are *necessary* in order to properly burn off the organic foam from the final product. Using a non-oxidizing atmosphere in the process of Jones would produce residue from the organic foam that would foul the resultant filter and any molten metal processed through it. It is never obvious to modify a reference in a way that renders it unsatisfactory for its intended purpose or that changes its principle of operation, as the use of a non-oxidizing atmosphere in the Jones process would. See M.P.E.P. §§ 2143.01.V., 2143.01.VI.

The pending action further argues (p.11) that "Jones teaches the use of the same materials and the same process of making the final product as that claimed thereby reasonably inherently resulting in substantially the same final carbon bonded network as claimed." Clearly the process described by Jones and that claimed here by the applicant are not substantially the same. Jones forms its filter by firing a dried slurry supported by an organic foam in an oxidizing atmosphere. The claimed process involves firing a compressed semi-damp mixture of ceramic powder and graphitizable bonding precursor in a non-oxidizing atmosphere.

The claimed process differs from Jones in not using either the organic foam support or an oxidizing atmosphere. As explained above, removing the oxidizing atmosphere from Jones would both fundamentally alter its process and render it unsuitable to make its intended product. Therefore the differences between Jones and the claimed process are substantial and would preclude any reasonable conclusion that the claimed carbon bonded network is necessarily and inevitably present in the Jones product. The mere possibility that the claimed network is present is not sufficient to support the rejection of applicant's claims on the ground of inherency. See M.P.E.P. § 2112.IV. ("The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or

characteristic.”)(citations omitted). For all these reasons, the rejections of claims 12-20 as obvious over Daussan in view of Morris and Jones and claims 22-26 and 29 as obvious over Jones in view of Daussan and Morris are in error and should not be maintained in the next action.

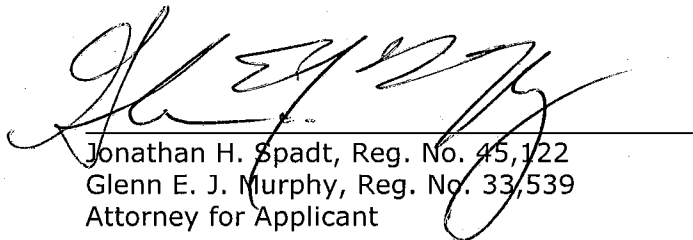
In the rejections of claims 12-20 as obvious over Daussan in view of Morris and Bell and claims 22-26 and 29 as obvious over Bell in view of Daussan and Morris, the claimed carbon bonded network of graphitized carbon present in an amount up to 15% by weight of the filter, absent from Daussan and Morris, is allegedly found in Bell. The explicit disclosures of this element allegedly found in the Bell '047 publication are not entitled to benefit of the parent filing date and therefore are not prior art to the claims of this application under 35 U.S.C. § 102(e). See Amendment of August 4, 2009 at pp. 9-10. Nevertheless the present action maintains that the claimed amount of carbon bonded network of graphitized carbon is described by Bell in paragraphs [0039], [0041], [0043], and [0046]. Office Action September 21, 2009 at pp. 11-12. The Action states that the mesophase described by Bell corresponds to the “graphitizable carbon bonding precursor” of applicant’s claims.

Whether the mesophase of Bell corresponds to applicant’s “graphitizable bonding precursor” is not relevant, as the limitation at issue in claims 12 and 26 is not the “graphitizable bonding precursor” but the “graphitized carbon constituting the bonded network being present in an amount up to 15% by weight of the filter.” Rather, it is clear that the proportion of mesophase reached during the firing in Bell does not correspond to the amount of the carbon bonded network of graphitized carbon present in the final filter as claimed, and that the “semicoke” described by Bell comprises not only the graphitized carbon formed from the mesophase but also the other carbon-rich materials in Bell’s binder material. Juma Decl. II at ¶¶ 17-25. Thus the cited portions of Bell that are entitled to the parent priority date for purposes of 35 U.S.C. § 102(e) do not describe the claimed element that is missing from Daussan and Morris, and the rejections of claims 12-20 as obvious over Daussan in view of Morris and Bell and claims 22-26 and 29 as obvious over Bell in view of Daussan and Morris should not be maintained.

Conclusion

For all of the foregoing reasons, Applicant respectfully requests reconsideration and allowance of the claims. Applicant invites the examiner to contact their undersigned representative if it appears that this may expedite examination.

Respectfully submitted,



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